



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Therapies for TBI-related Symptoms

Hyperbaric Oxygen for Blast-related Post-concussion Syndrome: Three-month Outcomes

Investigators at the Hunter Holmes McGuire Veterans Affairs Medical Center, including members of DVBIC, VA's Physical Medicine and Rehabilitation Programs, and Virginia Commonwealth University, conducted a randomized, double blind, sham-controlled study to test the efficacy of hyperbaric oxygen (HBO2) chamber treatment for PCS resulting from TBI. Marines with history of blast-related TBI and PCS were enrolled (n = 61). Participants received 40 compressions lasting 60-minute (min) over a 10 week-period in a HBO2 chamber under one of three conditions at 2.0 atmospheres absolute (ATA): (1) a surface air pressure equivalent of 10.5% oxygen (sham); (2) a 1.5 ATA oxygen exposure equivalent of 75% oxygen; and (3) a 2.0 ATA oxygen exposure equivalent of 100% oxygen. The primary outcome measure was the Rivermead Post-Concussion Questionnaire 16 (RPQ-16) score, collected before treatment and three months after compression. There was no interaction between performance on the RPQ-16, test time, and the intervention groups (sham, 1.5 ATA, 2.0 ATA). Performance on the RPQ-16 did not improve in participants who received the HBO2 treatment. The findings demonstrated that hyperbaric oxygen treatment does not have a clinical effect compared to sham controls on reducing symptomatic, cognitive, or behavioral sequelae associated with combat-related PCS up to three months post-compression.